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ABSTRACT

Emerging criteria are reported for judging the trustworthiness of action research studies as compared to the criteria established for judging the trustworthiness of other forms of naturalistic inquiry set forth by Y. S. Lincoln and E. Guba (1985). Differing conceptions of the nature of action research are delineated, and their accompanying implications for validity in action research are noted. Action science forms the theoretical basis for establishing these criteria for determining trustworthiness in action research. Additional validity criteria and issues for action research are offered via discussions of two studies: (1) a 1952 study by K. Lewin concerning eating habits; and (2) a study by K. Watkins concerning supervisor empowerment in a large company. Gaps between the theory and practice of validating action research projects point to the need to clarify and emphasize the significant role of teaching/learning and interpersonal competence in producing valid, potentially generalizable, results in action research. Three figures and one table illustrate the discussion. A 32-item list of references is included. (Author/SLD)

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VALIDITY IN ACTION RESEARCH

A paper presented to the American Educational Research Association

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Abstract

This paper reports emerging criteria for judging the trustworthiness of action research studies as compared to the criteria established for judging the trustworthiness of other forms of naturalistic inquiry (Lincoln and Guba, 1985). In this paper, differing conceptions of the nature of action research are delineated and their accompanying implications for validity in action research noted. Action science forms the theoretical basis for establishing criteria for determining trustworthiness in action research offered here. Criteria for judging action science research in particular are offered with illustrations from two studies.

Issues in Action Research

Action research is a form of research first developed by Kurt Lewin who coined the term about 1944 (Kemmis, in Kemmis and McTaggart, 1988). It has been criticized for either producing research with little action or action with little research (Foster, 1972; Sanford, 1981); weak when merely a form of problem-solving and strong when also emancipatory (Peters and Robinson, 1984; Kemmis, in Kemmis and MacTaggart, 1988), lacking the rigor of true scientific research (Cohen and Manion, 1985), and lacking in internal and external control (Merriam and Simpson, 1984), hence of limited use in contributing to the body of knowledge.

This paper is grounded in the work of Chris Argyris who with Donald Schon developed a variation of action research. From Argyris' early work on the inner contradictions of rigorous research (1980) to the later work entitled Action Science (Argyris, Putnam, Smith, 1985), Argyris has criticized other forms of research for producing knowledge which does not inform action. One of Kurt Lewin's last students, Argyris's work extends Lewin's conception of action research to include a methodology for transforming individuals and organizations so they can overcome the embedded patterns of reasoning which subvert action research/change programs. Argyris and Schon believe that social scientists are faced with a fundamental *choice* between rigor or relevance. Argyris (1980) criticized normal science for focusing on trivial problems, for distorting both subjects and researchers, for generating unreliable data, and for being generally unable to answer questions about everyday life.

On the other hand, Marris and Rein (in Cohen and Manion, 1985) argue that the principles of action and research are so different as to be mutually exclusive so that to link them together is to create a fundamental internal conflict. Sanford (1981, in Reason and Rowan) argues that the problem is one of fragmentation in social science which has led to a state of irrelevance such that social scientists are among the last to be called upon to solve social and policy problems. Finally, Rappoport (1970) suggests that action research must resolve three dilemmas, the resolution of either side of which will exacerbate the other: the dilemmas of goals, ethics and initiatives. The goals of action and research may appear irreconcilable but must be balanced through such things as contracting for adequate time for the research, access to data, and appropriate subjects. Ethical issues include confidentiality, collusion with the host organization, and competing organizations seeking access to the research or the researcher. Dilemmas of initiative stem from the fact that action research is service-oriented and grows out of the initiatives of the population under study rather than (solely) the initiative of the researcher which leads to problems of control. This is particularly significant when the host organization sees one type of problem and the research yields quite a different type of problem. Freire (1982) drew a different line: "We have to be very clear about the objective of this work: it is the people themselves, not the advancement of science. If, however, the people are silent, then we have to provoke them, because we are not neutral" (in Kemmis and McTaggart, 1988, p. 272). These issues suggest that threats to validity differ in action research and therefore criteria for establishing validity must evolve out of the unique characteristics of action research. Different conceptions of the practice of action research may help determine implicit validity criteria.

Defining action research. Kurt Lewin identified action research as a cyclical process which moves from an idea to reconnaissance to plan to action followed by reconnaissance, etc. (Lewin, 1952, in Swanson, Newcomb and Hartley). Others have defined action research with a number of different emphases.

"Action research is research on action with the goal of making that action more effective" (French and Bell, 1988). Here action research is measured by the difference in effectiveness of the subsequent actions taken. Reflection on action (Schon, 1983, 1987) would by this definition be a form of action research.

"Action research takes its cues--its questions, puzzles, and problems-- from the perceptions of practitioners within particular, local practice contexts. It bounds episodes of research according to the boundaries of the local context. It builds descriptions and theories within the practice context itself, and tests them through *intervention experiments*--that is, through experiments that bear the double burden of testing hypotheses and effecting some (putatively) desirable change in the situation" (Argyris and Schon, 1991, p. 86). In this definition, the interventions are the experimental manipulation and problem-solving is the goal. Contribution to knowledge is in the area of research on intervention.

"Action research is a form of collective self-reflective enquiry undertaken by participants in social situations in order to improve the rationality and justice of their own social or educational practices, as well as their understanding of these practices and the situations in which these practices are carried out" (Kemmis and McTaggart, 1982, p. 5). Self-understanding and transformation is the goal in this research. Contributions to knowledge are likely to be in the area of reflective learning and strategies to improve the rationality and justice of educational practice.

It's clear that the emphases in each of these definitions are quite different. Several streams of action research have emerged. Chein, Cook and Harding (1948) suggest four types: diagnostic (in which the researcher/scientist diagnoses a problem and makes recommendations for change), participant (in which the actors learn to take action and to conduct research; this is now called participatory action research, Whyte, 1991), empirical (in which the actors document action for research and reflection) and experimental (in which there is controlled research on different action alternatives). Kemmis (in Kemmis and McTaggart, 1988) finds that action research has become more a technology or a method than a means as Lewin first envisioned it to bring about social change. He advocates the use of action research as a way of doing critical social science aimed at empowering people from tradition, habit, bureaucratic systemization, individual expectations, or from instrumentalism. The following three variants illustrate the way in which the differing definitional emphases lead to different approaches.

Differentiating between action research, action learning, and action science. All three are organizational development approaches aimed at bringing about organizational change. Differences between the three versions of action research might be summarized thus:

- Action Research: Data informs action
- Action Learning: Learning improves action
- Action Science: Meta learning transforms action

Action research grew out of the assumption that developing data (the facts of the context) would lead to an unfreezing of the dynamic equilibrium present in people, groups and organizations. By collecting data around a problem and then feeding it back to the organization, the need for change would be created while the direction that that change might take would also be self-evident. Reflection on problems in groups which typically include members of the client organization, the collection of data around their problems, group analysis and group feedback, group-designed interventions to attempt to solve the problem, an iterative process of intervening, and the additional collection of data on the

effectiveness of the intervention followed by reflection and the invention of alternative interventions; are all hallmarks of the Lewin-invented action research team.

Action learning adds the assumption that what prevents people from implementing the changes that they seek to make is the necessary skills, especially the skill of challenging pet assumptions and thus of critical reflection. Revans (1982) defines action learning as "a means of development, intellectual, emotional, or physical, that requires its subject, through responsible involvement in some real, complex and stressful problem, to achieve intended change sufficient to improve his observable behaviour henceforth in the problem field" (pp. 626-627). He triggers unfreezing of individuals by placing them in the situation that most action researchers are in: they must solve real problems in real contexts and the success or failure of their efforts will be known and highly visible (public). Group reflection is again a hallmark. Action learning teams often add an element of stranger-ness to heighten critical reflectivity by having groups solve problems for departments and organizations of which they are not a part and of which they have little prior knowledge.

Action science adds to each of the above the idea that we can have a science of interpersonal action depicted as Model I and Model II. In other words, there are things we know about human interaction that are repeatably true and thus generalizable, and some of these characteristics create barriers to the implementation of change. These characteristics are learned, highly skillful responses to threat and are intervenable by action scientists. Moreover, in learning to intervene in a way that transforms people and organizations so that ongoing change is possible, action scientists are also adding to the knowledge base and creating a new science or theory of interpersonal action.

Each of these variations places an emphasis on one part of the action research process over another, yet there are some generally agreed upon characteristics. The characteristics of action research were examined in the works of eleven action researchers by Peters and Robinson (1984). They identified twelve general characteristics and three idiosyncratic characteristics, then assessed the presence or absence of each in the works of the eleven action researchers. Those appearing most often were that the research was problem-focused (mentioned in 11 works), collaboratively conducted and participatory (11), action-oriented (11), an organic or cyclical process (8), and scientific (8). Other categories mentioned less often were terms that often overlapped in meaning: normative, ethically-based, experimental, reeducative, emancipatory, stress on group dynamics, and naturalistic. This analysis, though sometimes inaccurate, showed that only Argyris and Lewin incorporate all but one of these characteristics.[1] Using their classification, it is clear that the research emphasis implied by "scientific" or "experimental" has less priority even among many of these practitioners of action research. What, then, are the implications for validity of this type of action research?

Validity

Validity itself has many forms. Brinberg and McGrath (1985) point out that validity is not a commodity than can be obtained through techniques. It is to be assessed relative to purposes and circumstances. They identify different stages of the research process and types of research and suggest that validity criteria are different for each. Minimally, the concept of validity as value or worth is appropriate for defining the nature of the relationships to be studied; validity as correspondence or fit is appropriate as a test of the methodology and procedures for doing the study; while validity as robustness is a

[1]For example, Peters and Robinson imply that Argyris does not stress a group dynamic, yet this is a cornerstone of action science "a science of *interpersonal* action" which relies heavily on case groups to bring about change.

useful criteria for examining the interpretation of the data. Goetz and LeCompte (1984) discuss validity in qualitative designs and suggest that validity requires that we answer two primary questions. First, do the researchers actually observe and measure what they say they are observing or measuring? Second, to what extent are the findings applicable across groups? The first, internal validity, is a strength of qualitative methods, while the second, like reliability, poses difficulties for the qualitative researcher who is often embedded in a single context. They characterize qualitative research as contextual, theoretically eclectic, and comparative and note that the same threats to validity noted by Campbell and Stanley (1963) exist for research of this type yet additional threats grow out of these characteristics of qualitative research. History and maturation, observer effects, selection and regression, mortality of subjects, and spurious conclusions threaten internal validity in qualitative studies as they do in others. In the case of external validity, however, the small size of most qualitative studies rules out the use of statistical methods for determining generalizability. Instead, external validity is a function of *comparability* (the extent to which the research is described in a way that is sufficiently detailed that it permits comparison to other studies) and *transferability* (the extent to which the research is theoretically grounded in order to be understood by other researchers). Selection, history, setting, and construct effects also impede external validity. Howe and Eisenhart (1990) call for a single standard for qualitative and quantitative research. They suggest five standards:

1. The data collection techniques must fit and be suitable for answering the research questions.
2. Data collection and analysis techniques must be competently used in a technical sense.
3. Studies must be judged against a background of existent knowledge.
4. Confirming and disconfirming evidence must be used to assure an overall warrant of trustworthiness.
5. Attention must be given to external value constraints in the form of responses to "So what?" questions and internal or ethical value constraints should be attended to in order to ensure the acceptability and legitimacy of research designs and the treatment of human subjects (pp. 6-8).

Perhaps the best known criteria for assessing the validity or adequacy of qualitative research are those by Lincoln and Guba (1985) who established four major criteria for naturalistic inquiry: *credibility* or "truth value"(activities in the field that increase credibility such as prolonged engagement, persistent observation and triangulation, peer debriefing, member checks, negative case analysis, and referential adequacy), *transferability* or applicability (through thick description), *dependability* or consistency (through an audit trail of methods used to reduce data), and *confirmability* or neutrality (through an audit trail and objective description). Schatzman and Strauss (1973) offer three criteria for assessing the "credibility" or the "ring of truth" for field research: propositions are *grounded in data*; *verification* is made by *the host organization or by an independent observer*; and the *phenomenon as described is recognizable as "lived experience"* (see Van Manen, 1990).

Validity in action research. Cunningham (1983) emphasizes that the test of validity in action research is whether or not the problem in the action context is solved and "locally valid" (p. 405). This contextual validation is similar to the Chein, Cook, and Harding (1948) idea that the job description of action researchers requires that they not only make discoveries, but also see that these discoveries are applied. In other words, the research is valid if it is applied in a particular context and "works" to solve the original presenting problem.

Winter (1987) discusses validity in action research from a critical social science perspective. To him, validity in action research is in the interpretive process rather than in particular interpretations, a process that is both reflexive and dialectic. Accounts of such research recognize that "the epistemological adequacy of an account is described in terms of

the interpersonal conditions of its possible production" (p. 126). Reflexive interpretation is the language of questions which asks whether any single interpretation is valid when meanings are in people and socially derived. "It creates a theoretic space by means of a general withdrawal from interpretation to problematic. This is a space therefore within which discourse can proceed under the auspices of theoretic grounds, which may be shared, and which thus may come to be agreed as valid theoretic grounds for the whole set of interpretations at issue" (p. 128). Reference to the "reflexive problematics of language itself" and an awareness that the action researcher is also beset by the very problematics he/she hopes to describe is an essential element of a valid account (p. 134). A dialectical approach asks us to embrace opposing interpretations and to place primary emphasis on meaning and understanding over reducing phenomena to the thinness of the numerically correlated operational variable. Validity in action research, says Winter, is not to be found in the degree of correspondence between reality and account, but *rather in the theoretical use of the principles of reflexivity and dialectics* to discipline both the telling of the account and the telling of the process of understanding the account. In Winter, as in Argyris and Schon, it is the quality of the inquiry process and the interpersonal skill of the action researcher which determine the validity of their accounts. Yet, to be consistent with critical social science, Lather (in Anderson, 1989) suggests that the emancipatory interests of critical action research must frame another criteria for action research: *catalytic validity or the degree to which the respondents achieve further self-understanding and self-determination* through participation in the research.

For example, critiquing the action research project conducted by Lazes at Xerox, Argyris and Schon (1991) note that appropriate rigor also involves a critical test of the claims of the researcher. Perhaps the interventions "work" because other conditions in the context (e.g. financial exigency) force them to and hence they are not likely to work again in other contexts. They call for, at a minimum, an operational description of what the researcher actually did, and a critical reflection on the claims or attributions he or she makes about the achievements of the process. In this way, the research can be replicated and competing explanations (the negative case example) may be examined for the research results. They suggest that from the action researcher's perspective, "the challenge is to define and meet standards of appropriate rigor without sacrificing relevance. And, for this purpose, action research needs three things: *a way of representing research results that enhances their usability, a complementary way of construing causality, and an appropriate methodology of causal inference*" (p. 85). Commenting on validity and teacher inferences, House, Mathison, and McTaggart (1989) also call for an appropriate method of causal inference as a basis for validity in action research. Validity based on causal inferences that emerge from *a theory of intentional causation* (cause and effect relationships that practitioners can infer from their experiences), the kind that guide everyday behavior, are more appropriate to action research than the Campbell et al. validity that is undergirded by the regularity theory of causation (in which research seeks to discover universal causal regularities).

Action Science

Argyris has evolved over forty years of scholarship an approach to action research entitled action science, a term he credits to one of his former students, William Torbert (Argyris, 1980). Action science is a science of interpersonal action in which actors within a community of social practice reflect critically on their beliefs, values and actions and generate new knowledge and actions. Data collection in action science consists of the recollections of actions and speech by the actors, the reasoning and rules governing their actions, observations of their actions, and action experiments. Data analysis in action science consists of discovering the meanings embedded in the action and representing the knowledge thus acquired in a way that is both disconfirmable and actionable. Data analysis tools include the use of the abstract models which Argyris contends represent two

contrasting and *generalizable* approaches to action (Models I and II), a ladder of inference[2] in which the movement from data to inference is made explicit and challengable, and mapping[3] which is a depiction of the causal model governing action in individuals or organizations. Argyris (1980) contends that rigorous research produced by normal science is flawed in that it uses a control paradigm that leads to dependence on the part of subjects and potentially an automatic tacit process that may produce distorted perceptions when individuals (either subjects or researchers) are unaware of gaps between what they espouse and what they do. Argyris argues instead for validity in the form of data which is verifiable (directly observable) and interpretations which permit future action to improve the problem situations and which are thus disconfirmable based on subsequent tests in the action context. Moreover, like Winter, he asks that the causal inferences, both of subjects and researchers, be made explicit. Finally, he asks that we develop a sense of validity about action knowledge in face-to-face situations that is both ethical (we do not unknowingly produce either dependence or distortion) and usable.

Summary Validity Criteria in action research

To summarize, many criteria have been proposed to assess the trustworthiness of action research studies. Criteria tend to evolve from either a cousin to action research (qualitative, naturalistic research), or from reactions against validity in the Campbell et al. understanding which is characterized as "normal" science. Criteria emanating from this review are those which are a result of the action-orientation and the fact that in this research, the skill of the interventionist/ researcher is a key determinant in the quality of the results. Since the interventionist must produce the phenomena he or she wishes to study, there is an intense need for a high level of interpersonal competence and for data on the researcher's practice. This must be obtained while simultaneously observing others. Moreover, the participants in action research are expected to take action as a result of this work. Hence, insights and findings are presented in a form that permits future action as well as future testing. The dilemma of all researchers regarding how to enhance knowledge utilization is exacerbated by the iterative action research process which cycles continuously between producing knowledge and taking action on that knowledge. Only the critical action researchers and Argyris and Schon appear to acknowledge the degree to which this action taking is dependent not only on communication of the data but also on the ability of the participants to learn and apply new skills.

Other validity criteria emerge from the participatory nature of action research and action science studies, including the extent and nature or quality of participation (Elden and Levin, 1990). Many action research studies appear to abort at the stage of diagnosis of a problem or the implementation of a single solution strategy, irrespective of whether or not it resolves the presenting problem. Validity both of process and of outcome must be established. Most of the criteria recommended by the authors reviewed here continue to emphasize action over research which is the major reason methodologists have tended to suggest that action research is not really research at all but a kind of applied problem-solving process. If action research is going to be accepted as science, validity criteria will have to demonstrate validity in both action and research communities. Only Argyris appears to do this in that he adds to the preceding criteria the idea of generalizability of the knowledge produced in action research, specifically the knowledge of intervention or of interpersonal action. Table one contrasts criteria for action research with those suggested by Lincoln and Guba (1985).

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[2]This is his method of causal inference. Argyris depicts through this means a causal reasoning process which leads to incompetent action.

[3]Mapping is a form of data display which normatively suggests alternative action strategies to those which have led to results that the individual or organization agree are not what they desire or intend. See Figure 2 for an example.

--Insert Table 1 about here--

Implicit Validity Criteria in Two Studies

Another source of information about concepts of validity is that implicit in the design and conduct of action research. Findings from two studies will be used to illustrate additional validity criteria and issues for action research. A classic study was that by Lewin (1952) who described an action research project to change the eating habits of individuals during the war to increase individuals' consumption of unpopular but nutritious foods such as beef hearts, sweetbreads, and kidneys. He initially collected data to depict the process of moving food to the family table. He determined that housewives were the primary decision-makers regarding eating habits. Radke and Klisurich (in Lewin, 1952) found that group discussion was thirty times more likely to increase consumption of the targeted foods (3% vs. 32%). Subsequent studies to encourage milk consumption showed a similar relationship; and group decision also proved more efficacious than individual instruction in encouraging consumption of orange juice and cod liver oil.

The research reported by Lewin was validated in at least two explicit ways. First, it was assumed that the change would have to be long term, hence persistence of the change was a criterion for evaluating the effectiveness of the action research project. This led to repeated measurement of the change through follow-up contacts with the housewives in both groups, a research device which might also have been an unintentional intervention of its own to encourage use. Second, the research was validated by measuring the degree of accomplishment of the original goal, consumption of the specified foods.

Lewin explained the results of this collection of studies in terms of psychological responses to influence when an individual is resistant to an idea or to change. His theory of how forces in the life space respond to the removal of constraints or barriers to movement and to group influence was the theoretical framework for these studies. The group intervention and the lecture were specifically structured to at least potentially enable the removal of constraints. Theory guided both intervention and analysis. In many ways, Lewin reports studies that are like most other experimental studies with the only differences being the quality of on-line interactive engagement with the person whose behavior the researchers seek to change and the presence of a larger social change objective. The methods Lewin reports were not collaborative or participative nor was there an explicit critical or emancipatory purpose. I include this well known study in this analysis to suggest that in many ways, Lewinian action research is more research-oriented than action-oriented, yet action in the form of a social change (changing eating habits to support the war effort) was the over-arching goal. Lewin's work differs considerably from more contemporary emancipatory variants though research is still in the service of action.

Action science is one form of action research which incorporates an emancipatory intent and illustrates the concommitant problems of validity of this approach. In an action science study, this author examined the idea of empowerment for supervisors in a Fortune 100 high technology corporation. Thirty supervisors from three different shifts and two separate divisions were divided into six case study groups. The study was an examination of critical incidents of problematic interactions in the workplace around the theme of empowerment. Supervisors wrote cases of problem incidents with both what they said or did and what they thought but did not say. Groups consisted of five or six first or second line supervisors plus an action science facilitator/researcher. Group discussions then explored the nature of the thinking or reasoning behind the actions taken, possible unintended consequences of the actions taken, and feasible alternative options for action. These groups met over a period of four months which enabled them to experiment with alternative action strategies to begin to implement some of the ideas emerging about empowerment. Data in the form of cases (at least one from each participant), transcripts of initial problem identification interviews, and transcripts of group discussions were collected. The study concluded with a presentation of a number of maps depicting critical

themes in empowerment to the operational managers to whom the supervisors reported. Figure 1 is an example of a second level supervisor's case which illustrates the high consequences supervisors perceived in making mistakes. The map developed to portray the theme of making mistakes in a zero defect culture is presented in Figure 2.

--Insert Figures 1 and 2 about here--

Mapping is a vital instrument in action science. Maps allow action scientists to go beyond the details of a particular case to represent patterns of behavior and belief systems. They are systematic depictions of governing values, action strategies and consequences. No map is complete until participants offer confirming and disconfirming evidence regarding the map. In this case, each of the six groups confirmed or disconfirmed each of the maps depicting the themes of making mistakes, new rules or values, responsibility, centralization, and learning in the workplace. In this process, minor changes and sometimes major additions were made to the maps. This member checking is one form of validity in the action science process, but here there is the added assumption that participants have internalized (*learned* through the action science process) values and beliefs against which new data is tested. Validity is thus partially determined by the skill of the facilitator in teaching new skills to participants. The map is an heuristic, artistic embodiment of the themes identified through the group analysis of cases. Development of a map takes considerable skill and conceptual clarity about the theory of interpersonal action embodied in action science, particularly since it is intended to be another intervention in the action science process. The relationship to the original data, the cases presented, must be clear. The map depicts a causal pattern of beliefs and actions which are alterable, hence the idea that research results are presented in an actionable or usable form. When presented in a normative format, alternative beliefs and actions are suggested in contrast to those that emerged from case discussions. Therefore another source of validation is whether or not subsequent new actions alter the original problem posed in the direction hypothesized by the alternate map. Figure 3 is an example of a normative map used in this study.

--Insert Figure 3 about here--

Theory to Practice Gaps

Does validity of process or diagnosis necessarily produce validity of outcome? In the comments of action researchers, one sees a number of dilemmas surrounding validity. On the one hand, diagnosis is easier to set up as a more "controlled" research process, so the researcher often expends more time and energy in this area leaving the actual implementation of the action recommendations up to participants who may or may not have acquired the skills to implement them. Construct validity in action research terms is to some extent whether or not the outcomes developed actually solve the presented problems. As in normal science research, this is the most difficult criterion. Further, action researchers have difficulty communicating the extent to which the interventions they implement are skillful, other than in terms of their outcomes. This probably accounts for the plethora of "success story" action research reports. Yet, most action research projects are long term cyclical processes of successive approximations of the phenomena of interest. Where are the critical reports of the more problematic fits and starts of such efforts? The skill of diagnosis and analysis in real time is also difficult to communicate, but perhaps greater detail about the early stages of an action research project would help novice action researchers begin to appreciate what is involved. In the end, these are highly personal skills. As Moustakas (1990) notes (paraphrasing Polanyi, 1969) "The synthesis of essences and meanings inherent in any human experience is a reflection and outcome of the researcher's pursuit of knowledge. What is presented as truth and what is removed as implausible or idiosyncratic ultimately can be accredited only on the grounds of knowledge and judgment" (Moustakas, 1990, p. 33). Even the description of the project as a "success" seems to me to take a very complex mosaic of things that worked, people who

learned and people who did not, and an overall process that is ongoing, and reduce this mosaic to "the thinness of the numerical correlation."

Is is a question of validity or of gaps in skill? As I reflect on my own practice, I am struck by what seems like a minimizing of the extraordinary difficulty in developing both one's own and participants' skill in enacting new behaviors suggested by the notions of validity presented here. This learning/teaching aspect of action research is interdependent and contextual. It is clear that one reason action research studies are often diagnostic is that there is a gap between our ability to diagnose and invent a solution and our ability to produce it (Argyris, Putnam, and Smith, 1985). In action research, this gap is likely to be in both the researcher and the researched. I recall the supervisor who came in to one group session with his equivalent to a "Eureka!" He reported that he had tried to use the new skills he was learning to discipline an employee. He stopped himself from lapsing into one of his frequent temper flare-ups and remembered to listen to the employee and, while sharing his initial judgment about her behavior, to inquire into her reasoning about the incident. He found that his new skills made her much more receptive to his advice. In effect, from the perspective of action science, he had learned a new way to control others, rather than a new paradigm for empowering others. He had a tool, but not the underlying values behind the tool. Despite his learning progress, there was still a significant gap between his inventions and his actions. The extraordinary number of minute-to-minute judgment calls between action and research imperatives may also lead to compromises of either or both agendas. In face to face real time contexts, in which the goal is to teach people new behaviors that are themselves difficult or high threat, the interventionist must continually respond to the evolving ability and willingness of the participant to change.

Another skill gap. Individuals seeking to solve problems in complex, real-time settings find that the problems change under their feet, often before the more in-depth iterattive search for solutions suggested by action research has achieved meaningful results. For example, in the empowerment study, our initial contracting included a requirement that all participants be volunteers. Midway in the process, a few individuals alluded to the process by which they "volunteered." Managers had called them into their office or sent them a memo asking them to "volunteer" for this project. In other areas, a memo was sent to all supervisors asking that those interested contact personnel to sign up for the program. It became clear that my competence in contracting with the organization was limited to an espoused value on voluntary participation but I had left it up to the organization to determine how to enact it. The obvious contradictions between empowerment and mandatory participation clearly had the potential to undermine the goals of the action research project. From a research perspective, reluctant participants may be more likely to produce evidence of the critical incidents of a lack of empowerment, including the way in which they reached the session. From an action perspective, the evidence of systemic barriers to empowerment was made explicit and these individuals were less likely to be convinced that they could alter their assumptions and attain greater control over their environment. Furthermore, a part of the group structuring included a mixing of shifts and divisions, hence many groups included individuals from the areas that had mandated participation. Although this issue led to a number of discussions about the directly observable differences in empowerment from area to area in the organization, feelings of injustice seemed to increase among those areas that had mandated participation as evidenced in comments like, "Well you can try that in <u>your</u> area but in <u>our</u> area. . ." I could not help but think that had my skill in contracting and teaching the client been greater, I might have increased the likelihood that the action research itself would not be structured in advance in a way that was disempowering to at least some of those who participated.

Generalizability vs. Contextual validity. Argyris and Lewin contend that the findings from action research can add to the body of "action" knowledge. Argyris developed Model I (a control paradigm) and Model II (a learning or reflective paradigm) as generalizable, contrasting depictions of interpersonal action which can be tested across many contexts with different people. Cases in action science are analyzed to determine the

extent to which the problematic interaction represents a control orientation and individuals role play the interaction while attempting to enact a learning orientation in order to test (by group reflection) whether or not the enactment of Model II behaviors produces more effective results. However, the enactment of Model II behaviors is counterintuitive and requires significant, transformative learning. Again, the teaching/learning and interpersonal competence of the researcher must be at a very high level before one can truly test this assertion.

Maps in action science are intended to depict patterns of reasoning and behavior in a given context. Yet, I have found that they may generalize to other contexts as well. One map I developed in another study described the internalized beliefs of trainers about their role and illustrated actions which followed from them. The map was based on interviews with fifty-seven human resource developers in three different types of organizations and was confirmed by a subgroup of these individuals as well as by other groups of human resource developers. At a research conference, a researcher who had recently completed interviews with a number of literacy educators noted that this map described what she had seen in her research as well. This type of validation appears to me to be at least an intimation that these are generalizable patterns beyond a given local context though of course in this instance the maps were developed in an interview study. The maps developed at the high technology corporation were validated across six different groups, which again suggests at least limited generalizability to the larger organizational context. Moreover, the fact that I and B. Blackburn-Turner were able to adapt D. Smith's (1986) map on managing transitions to reflect issues of empowerment with only minor adjustments suggests that Smith's map may be somewhat generalizable to other problems of organizational change. At any rate, in work with now over 200 individuals I have seen that the constructs of Model I and Model II have recurringly depicted significantly different patterns of behavior which produce significantly different results repeatably. Surely this is generalizability?

Implications

Quantitative and qualitative research have shared a standard of objectivity. Yet, participants in action research programs expect to be treated not as objects or even subjects, but as co-researchers engaged in "empowering participation" and in "co-generative dialogue" between "insiders and outsiders" (Elden and Levin, 1990). As Howe and Eisenhart (1990) note, standards for educational inquiry must go beyond tautological arguments for or against insider or outsider perspectives. Rather they must be "anchored wholly within the process of inquiry" (p. 3) and address the broader question "Are warranted conclusions obtained about some important educational questions?" (p. 6). In action research, truth "anchored wholly within the process of inquiry" is in the process of inquiry itself. Was it reflexive and dialectical? Was it ethical and collaborative? Did participants learn new research skills, attain greater self-understanding, or achieve greater self-determination? Did it solve significant practice problems or did it contribute to our knowledge about what will not solve those problems? Were problems solved in a manner that enhanced the overall learning capacity of the individuals or system? These are the types of questions which must guide action research.

Nevertheless, reviewers who equate intervention with practice, subjectivity with bias or philosophizing, or heuristic forms of data display with "going beyond the data," continue to play a powerful role in setting the standards for research and in shaping the way such research is described in research journals. In 1947, Lewin wrote that "The research needed for social practice can best be characterized as research for social management or social engineering. It is a type of action-research, a comparative search on the conditions and effects of various forms of social action, and research leading to social action. . . .This by no means implies that the research needed is in any respect less scientific or 'lower' than what would be required for pure science in the field of social events. I am inclined to hold

the opposite to be true" (pp. 150-151). This paper has reviewed the literature of action research and action science to suggest competing and different criteria for judging these types of research. Lewin may indeed be correct in suggesting that appropriate rigor in this research is more demanding. Finally, I have identified a number of gaps between the theory and the practice of validating action research projects which point to a need to clarify and emphasize the significant role of teaching/learning and interpersonal competence in producing valid, potentially even generalizable results in action research.

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Table 1. A Comparison of Guba and Lincoln's Criteria for Assessing Validity in Naturalistic Inquiry with Criteria for Validity in Action Research

Guba and Lincoln (1985)	Action Research
Trustworthiness/Credibility (How can we establish confidence in the truth of the findings for both the context and for the respondents?)	Trustworthiness/ Usability (How can we both establish confidence in the research findings while developing both action and research skills among participants and ensuring that the solution works in context?)
Transferability/Applicability (How do we determine the extent to which the findings have applicability with other contexts or subjects?)	Relevancy/Applicability in Context (How do we determine the relevance of findings to the needs of the problem context?)
Dependability/Consistency (How can we determine whether the findings would be repeated with the same or similar subjects or contexts?)	Dependability/Competency (To what extent are we able to determine the adequacy of the process and are problems solved in a manner that permits ongoing learning of the individual or system?)
Confirmability/Neutrality (To what extent are the findings determined by the subjects & the conditions of the inquiry and not by the biases of the researcher?)	Normative/Reeducative, (How consistent are procedures and outcomes with the normative theory guiding the research? In other words, do participants learn, are situations transformed as predicted by the theory?)

Figure 1: Making Mistakes: A Second Level Supervisor in A Case of the Wrong Form

Operator from 4th shift was issued a notification of a policy violation form for being late from lunch. This should have been counted as an occurrence and her pay docked instead of an abuse of personal privilege. She denies being late at all and believes she doesn't deserve to be written up.

Why did we use the wrong form! This is going to be bad.	Supv: (me) I checked into the situation and we did use the incorrect form. You don't get a documented warning for this because it was a tardy from lunch, but it is an occurrence.
	Oper: Well, it's not correct. I don't cheat (the organization) and I have no intention of doing so. I can get you a witness to verify I wasn't late.
Sure, who would admit she was late knowing they have to work in the same area?	Supv: (me) No, I don't need a witness. I wouldn't put you or any individual that works with you in that position. Are you saying that your supervisor is lying about the total time you were out of the area?
	Oper: I am not calling my supervisor a liar, but I wasn't late and I can get you a witness.
Now she's going to think, "they always stick together".	Supv: (me) Well, I can't have a supervisor lie abut something like this. There is no reason for this to be made up and ...
	Oper: I understand you have to take his side, but I want you to know I'm taking this higher, not with anyone here. I won't stop here.
THREAT!	Supv: That is your prerogative and if you need any other information from me, let me know. Thank you for your time.

Figure 2. Making Mistakes: A Causal Map

Beliefs	Actions	Consequences
When I believe my subordinate made a mistake and that management will lose face	•Unilaterally protect management by backing up the subordinate and escalating the issue	Upper management is more likely to overturn the decision;
	•Stand on Procedures, acting as though this were not a gray area which requires judgment calls	The subordinate will not learn how to make more effective judgment calls and I and management will lose face.
Management should have all the details or they make wrong decisions and lose face.	•Act as though management has all the details and do not inquire even when I know they are wrong.	Managers lose face.
	•Blame upper management when operators point out errors in policy.	Employees are not empowered to participate in a healthy way in decisions that directly affect them even when they have more information.
		Managers are not aware that employees have anything to contribute.

Figure 3. MANAGING TRANSITIONS: TOWARD EMPOWERMENT[1]

Working Assumptions	Problem-Solving Strategies	Impact on Participants	Consequence for Culture	Consequences for Problem Solving
Constraints may be alterable Others may be influencable	• Publicly share your understandings of the problem • Encourage different views and design ways to compare them •Jointly design and implement solutions • Publicly reflect on results	•Reduce level of: misunderstandings unawareness polarization defensiveness •Increase sense of: commitment responsibility	•Fosters norms of: personal responsibility initiative experimentation	Higher probability of solving problem without unrealizingly creating new ones If problem goes unsolved, higher probability of discovering it and the barriers to solutions
Constraints are intractable Others are not influenceable	• Unilaterally assert your view of problem • Discourage different views •Unilaterally impose solutions and act as if you are not • Privately reflect on results	•Reduce sense of commitment, responsibility •Increase level of: mistrust resistance unawareness polarization pessimism/cyniciam	•Fosters norms of: game playing top-down management subversion dependence and protection	Higher probability of problem remaining unsolved and not knowing it's unsolved If problem is solved, higher probability of simultaneously generating new ones and not knowing it

[1]Originally developed by D. Smith and adapted by K. Watkins & B. Blackburn-Turner